

SIXPENCE

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AMATEUR RADIOS

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FROM THE EDITOR'S PEN:-

As this present war drags on and on, it is remarkable to find that the value of the "Amateur" is being more and more appreciated by Commercial interests.

Considering the pre-war attitude of these interests towards the Ham, the more or less complete change about by these interests augers well for the future of Ham Radio.

As Editor of this Magazine it is my duty to peruse all available local and overseas publications dealing with radio, and from time to time one reads in various commercial publications praise for the work the Ham is doing both in the Fighting Forces and in the Commercial sphere.

The most recent 'pat on the back' comes from the Editor of 'Electronics' in an Editorial in the August Issue of that Magazine. The Editorial is headed "AMATEURS" and to quote his remarks:-"

"In spite of the fact that everyone admits the value of the radio amateur in the time of peace or war, disquieting rumours get about that he is to be liquidated.

This seems highly undesirable from every standpoint. As he has demonstrated time and again, the Amateur is an essential element of the radio industry, an essential part of our national life. This is not true, alone, because he pounds brass and can help out in time of distress; nor is it true because he builds radio apparatus, and therefore is an engineer; nor is it true alone because he is a member of the amateur game where he has learned the value of a high spirit de corps. The Amateur is all these -- he knows his equipment, he can build it and maintain it in operation; he has enough theory, and lots of practical experience and knowledge.

Within the past few months, the Editor of Electronics has had his hands full of a high priority job for one of the armed services. Many men have been hired. It is only fair to state, right now, that the best men on his staff are those who have had Amateur experience. This testimony is available anytime, anywhere that it may be useful in keeping the amateur in radio after the war."

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AMATEUR TEST EQUIPMENT REQUIREMENTS

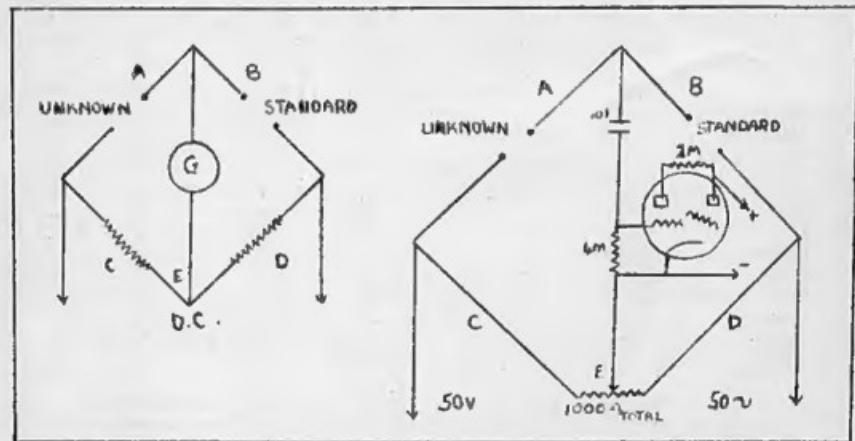
Charles C. Quin...VK3WQ

THEORY...The mere mention of theory to a Ham is usually met with a surprised look--the obvious thing then, is for him to say "What!! Do we have to try and swot up for our licences again??

Perhaps it would be a good thing if we did, because the advances that must have been made in the years we have been off the air, will surely astound us. Not everybody has had the time, nor the opportunity, to keep in touch with the few details which are published regarding some of the known apparatus in use.

However the saying 'An ounce of theory is worth a ton of practice' needs some reflection. We must know what we are doing, and what to expect from the apparatus being used, therefore our next point will be the explanation of the theory of operation of the various pieces of gear so far described.

A.C. Mains OPERATED BRIDGE...First of all it would be as well to consider the basic Wheatstone circuit, then compare it with the circuit we are using.



The basic circuit relies for its operation in that DC applied to junctions AC-BD will divide, and if any difference in resistance (total) appears in either arm a current will be read by the galvanometer. If both arms are equal, current will equally divide and no potential will be registered by the galvanometer. The ratio arms C, D are normally fixed values and the standard is made variable.

It will then follow that if the standard is made a fixed value, and the ratio arms varied so that the TOTAL resistance AC, equals the total resistance BD, balance can still be obtained.

On referring to skeleton circuit of the AC mains bridge, and comparing it with original this will be followed. In both cases the formula for this can be given as:-

$$\frac{A}{B} = \frac{C}{D}$$

Or, to give an example, we wish to measure a resistance whose value is less than 10,000 ohms. Selecting the 100 ohm standard, E is varied until no AC is indicated by the eye, meaning that $AC = BD$. Reference to scale shows 10, and 10 multiplied by 100 equals 1000 ohms.

Shown as formula above, this point on scale would represent $1/11$ of the resistance of E in D arm and $10/11$ in C arm. Then -

$$\frac{A}{B} = \frac{C}{D} \text{ or } \frac{1000}{100} = \frac{910}{91} \text{ or } \frac{1000}{100} \times \frac{91}{91}$$

that is:- $A = 1000$ $B = 100$ ten times
 $C = 910$ $D = 91$ ten times

As stated in the text originally extreme accuracy is not attainable with the AC mains bridge, but if care is taken in the original calibration, this 1000 ohm example should fall at 10 on the scale.

In AC bridges, both resistance and capacity may be measured, whilst comparison of the smaller inductances may be made, both iron and air core.

With a suitable attachment, accurate measurements of iron core inductances may also be made. This latter measurement will allow DC current to flow through the winding.

If the bridge is to be used for the latter applications, it would be as well to read up one of the available text books on this subject. The reason for this mention is that certain complications arise, namely, resistances should be pure resistance (non-reactive or non-inductive) also the frequency of the applied AC naturally affects results.

For the frequency employed in the bridge described namely 50 cycle, condensers and resistors measured can be assumed to be correct for DC considerations. An advantage is that there is no worry about frequency stability, and the influence of stray capacities is much less than at higher frequencies.

A point to watch, is to always carry out the measurements with the lowest range available, that is, greater accuracy will be obtained with C and D most nearly equal.

It is known that, for higher values of resistance and capacity a higher voltage applied, will give greater sensitivity. This is the purpose of the 1000 ohm resistor in series of the AC supply. When little or no current is taken, the voltage drop across this resistor is practically nil, but for higher currents, up to a dead short, it reduces the voltage (progressively) available at the instrument terminals. So that for higher values, the full 50 volts is available and the lower values, which would normally require heavy current, the voltage is reduced and little current taken.

Since provision is made in the measurements for taking into account the reading of POWER FACTOR the following short description is deemed necessary.

In AC engineering the equation $\text{Cos}\theta = \frac{R}{Z}$

Where $\text{Cos } \theta$ = power factor (current/voltage relationship in terms of lead or lag

R = Resistance

Z = Impedance (resistance) and Reactance (reactive ohms)

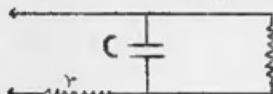
This is known as the power factor of a circuit, and is used to indicate the exact ratio, between any two sinusoidal waves of either current, voltage, or both, relative to each other.

In a pure condenser, that is, one which possesses capacity alone the current will lead the voltage by 90 degrees, therefore power factor is taken as zero. It is assumed that this condenser has no series or parallel resistance (actually no practical condenser has zero power factor.)

If on the other hand, inductive reactance alone is in the circuit the current will lag the voltage by 90 degrees, hence again power factor is zero. As all inductances have resistance, again the power factor would be between zero and one, as in capacity.

Whilst with pure resistance in the circuit the current AND voltage are in phase, the ratio is one, and hence power factor is 100% (unity). A good condenser should have nearly zero power factor as should a good choke coil. Resistors for use in AC circuits, should on the other hand, have a power factor of 100%.

As we are considering condensers, we give the following example:-



C = Actual capacity

r = Resistance (which can appear in series or parallel with the condenser).

r for instance, may be introduced by bad dielectric material, the condenser is then said to have a power factor between zero and 1 which can be determined from the formula above.

Transformer Problems

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Another formula can be given for Power Factor.

$$\text{Power factor} = \frac{\text{Watts}}{\text{Volt amperes}} \quad \text{or} \quad \frac{\text{True power}}{\text{Apparent power}}$$

here the power factor is equal to the actual power in the circuit (watts) divided by the product of the current and voltage (volt amps)

In terms of a circuit property, it is equal to the resistance divided by the impedence in the circuit shown as:-

$$\text{Power Factor} = \frac{R}{Z}$$

For our considerations, it will be noted, from the circuit in the October Issue, that the simple expedient of introducing a variable resistor, in series with the 1 mfd standard, in order to balance out the resistive component of the poor condenser under test serves the purpose. Measured at 50 cycles, electrolytic condensers usually show a relatively large power factor, which if over 30% would mean their rejection.

Mica Condensers are usually good, but poor bakelite or 'moulded mud' cases will introduce some losses.

Concluding, a true explanation cannot be given of Power Factor without the use of vectors. An article has been promised on this subject and should appear shortly.

OSCILLATOR FREQUENCY STABILITY

The problem of oscillator frequency stability becomes more and more important as the radio spectrum becomes more crowded. Receivers must be capable of separating stations with a high degree of accuracy and must maintain the signal properly tuned for relatively long periods of time. This requires a high order of oscillator frequency stability. The principal factors contributing to oscillator frequency drift can be divided into four parts. These are:-

1. Temperature.
2. Humidity.
3. Operating parameters.
4. Shock and vibration.

Temperature.

The effects of temperature variations are probably of greatest importance since they are present under all operating conditions. These variations can be compensated over a small frequency range by the use of a negative temperature coefficient capacitor. This is not the correct approach however, as the drift would undoubtedly be due to several factors and the amount of compensation necessary to accomplish the desired effect would be excessive. Furthermore, compensation would only be correct over a narrow band of frequencies. For best results the drift due to each component should be studied separately.

The circuit layout should be studied first. All leads should be short and direct and proper ventilation should be provided to keep temperatures as uniform as possible.

The temperature of the tube usually stabilizes within the first 15 minutes of operation, while the other components may require an hour or more. It is thus fairly safe to assume that the relatively high drift encountered during the first few minutes of operation is due to the tube. The amount of this drift may be determined by substituting a cold tube for the warm tube when the initial drift has just stabilized and note the degree of frequency change. Once determined, a separate compensating capacitor can be employed which will offset this drift. With the tube drift accounted for and corrected, it is then possible to study the drift due to the other components.

Probably the component responsible for the largest amount of drift is the inductor. Variables to be considered are distributed capacity, expansion of coil form and wire and the Q of the coil. In general the coil form should be of low loss material; for instance, it can be shown that an inductor wound on a phenolic coil form will have more drift than one using a ceramic form.

A coil wound on a high loss factor material will obviously have a relatively high distributed capacitance. This will vary somewhat with temperature and in consequence will affect stability.

Effects due to the expansion of the coil form and also of the wire may be very complex. Theoretically it may be possible to design a coil wherein the expansions of wire and coil form balance to give a zero change of inductance with temperature. Practically, however, it is inadvisable, due to production variations in the materials.

The best approach when designing a coil is to keep dielectric losses to a minimum and to endeavor to reduce physical changes due to temperature effects. Variations due to expansion of the wire must be considered. By consulting a table showing the properties of metals we find that Invar or Nilvar have very low coefficients of expansion. The specific resistance of these metals, however, is quite high compared with silver and copper. Due to skin effects at radio frequencies the current travels only in a small portion of the outside of the wire. This phenomenon can be taken advantage of in the design of temperature-stabilized inductors by plating a metal such as copper or silver on wire which is thermally stable. An inductor wound with this composite wire on a ceramic form will show a change of less than one part per million per degree centigrade.

Oscillator circuits which require a tickler coil may be improved by spacing the tickler coil from the secondary by means of polystyrene tape, or better still, by designing the tickler so that it is located inside the secondary, with as little dielectric material between windings as possible.

Temperature effect on condensers must also be considered. Tuning condensers give negligible trouble, provided good electrical and mechanical design is followed. Negative compensating condensers are of two types; titanium oxide and bimetal - the first type being more popular on account of their compact construction. For variations of up to about 40 degrees centigrade these condensers have proved satisfactory.

Wiring panels, stand-off insulators and insulation on hookup wire have a very definite effect on the frequency stability of a tuned circuit. All high potential (RF) leads should be as short and direct as possible. Insulation should only be employed where it is impossible to support the wiring on ceramic stand-off insulators,

Phenolic insulation should be avoided, particularly in wave band switches, terminal panels and coil form since this

material "ages" over long periods when subjected to high temperatures.

HUMIDITY.

Humidity effects can be considered greater than those due to temperature if good insulation is not employed. Components should be non-porous and possess a surface which does not easily wet. Wax impregnation of component parts is not always the answer to the stability problem. It is necessary to apply a heavy coating without any pin-holes the heavy coating being necessary because most commonly used waxes absorb water to a certain extent under conditions of high humidity. Wax also adds additional dielectric losses to the circuit.

Good humidity protection with a minimum of temperature instability can be obtained by treating the part with a polystyrene base varnish. This adds little extra dielectric loss and allows practically no moisture absorption.

OPERATING PARAMETERS

The stability of an oscillator is largely dependent upon changes in the effective input and output impedances of the tube, the effective Q of the tank circuit, the harmonic content of the generated wave and the oscillator load. Variations in tube impedances are inversely proportional to the effective Q of the tank circuit; therefore a low L/C ratio is desirable.

Harmonics generated by the oscillator cross-modulate with each other and with the fundamentals to produce currents which are not in phase with the fundamental current due to normal operation. The resultant current affects the frequency of operation. Obviously, then, harmonics should be suppressed. Here again a high effective tank Q is desired since the impedance to harmonics will be at a minimum.

SHOCK AND VIBRATION

Shock and vibration can seriously affect frequency stability of an oscillator if the individual components and the complete unit are of poor mechanical design.

The effects of vibration can be minimised by the use of rubber cushionings in the form of shock mounts. For best results these should be placed in the plane of the centre of gravity.

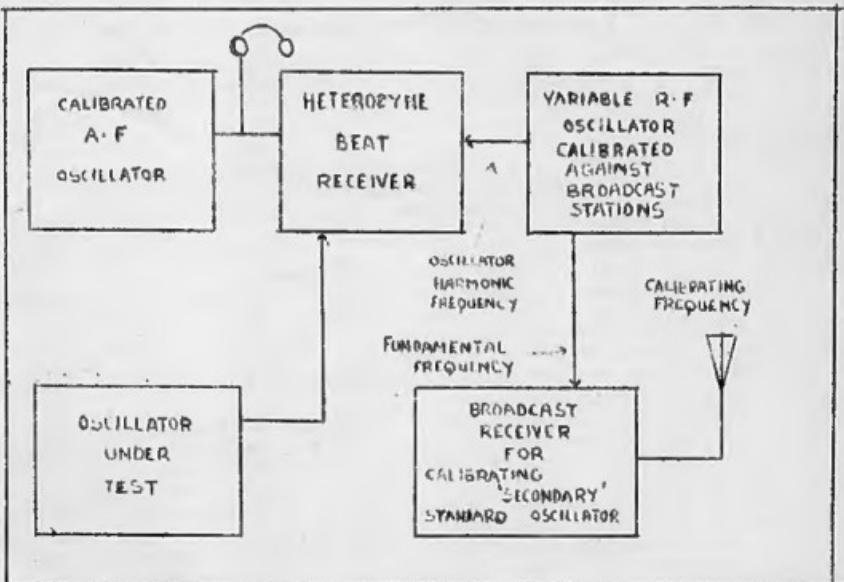
COMPENSATION

After all possible precautions have been taken to increase the frequency stability of an oscillator then, and only then, should the designer resort to methods of compensation. Fortunately, most component parts have a positive temperature coefficient so that a titanium dioxide condenser can be used to correct the variations.

MEASUREMENT OF STABILITY

A method which has proved satisfactory is shown schematically in Fig. 1. An auxiliary oscillator whose frequency has been determined by heterodyning against a broadcast station or other reliable source is coupled to a receiver so that a beat note is obtained between it and the oscillator under test. It is simply a matter of tuning the oscillator under test to zero beat with the secondary standard, and measuring the change in beat note against time by comparison with a calibrated audio oscillator. Checks should be made to ensure that the secondary standard is not drifting in frequency.

(Taken from article in "Radio.")



THE TECHNICAL LIBRARY

ULTRA HIGH FREQUENCY RADIO ENGINEERING...W.L. Emery (New York) 1944
295 pages ... 26/-

The matter of UHF engineering is certainly receiving some attention these days.¹ We have previously reviewed two substantial volumes dealing with UHF very thoroughly and here is yet another; but this time in the lower price range and rather more elementary in scope. This is a book which can be recommended as an introduction to UHF.

Chapter headings, which are indicative of the range of subject matter are as follows:- Introduction, Voltage Regulated Power Supplies, Electronic Switching and Synchronization, C.R. Tubes and Sweep Circuits, Amplifiers, Square Wave Testing and Transient Response, UHF Circuit Elements, Oscillators, Modulation and Detection, Radiation, and Wave Guides.

The Book is written as a text for use of Electrical Engineering graduates doing the first year of a conversion course in UHF engineering, but is equally useful for self-study purposes. Numerous experiments are described in conjunction with each chapter and the bibliography is extensive. The text is illustrated throughout with clear and informative diagrams.

U.H.F. TECHNIQUE .. Reprinted from "Electronics" .. 61 pages .. 4/-

Quite a useful magazine size booklet has been compiled by the Editors of 'Electronics' from articles published in that journal during 1942, to provide a sort of general framework of basic knowledge of UHF around which a more complete understanding may be built up by reference to more advanced work.

There are eight articles altogether by various authors, the titles being; Electrical Concepts at Extremely High Frequencies, Radiating systems and Wave Propagation, Generators for UHF Waves, UHF Reception and Receivers; Wide Band Amplifiers; and Frequency Multiplication; Measurements in the UHF Spectrum; Applications of Cathode Ray Tubes; Wave Form Circuits for Cathode Ray Tubes.

Diagrams, which are numerous are in the well known "Electronics" white on black style and are particularly clear and easy to follow.

In commenting on this booklet I cannot do better than to quote from the final paragraphs of the foreword..."the editors of "Electronics" offer their readers this compilation of UHF technique with its three-fold presentation.

(1) In plain simple understandable text, the philosophy of UHF technique is given to outline the nature of the problems at frequencies for which line of sight transmission is of paramount importance.

(2) By means of graphs, tables and equations, the more important quantitative results are given to familiarize the technician with the general magnitude of the quantities involved.....

(3) Finally since UHF cannot be treated thoroughly in a 60 page booklet, a convenient bibliography is included at the end of each section."

All books reviewed in this page are by courtesy of McGills, Melbourne.

SLOUCH HATS and FORAGE CAPS

Here is 1945 and at the moment the chances of QSO's this year do not look too bright...all the same, to all of you I wish the best of luck for the year and may you all be reading this column in one year's time. To those of you that have sent notes to column, many sincere thanks from all of us...and you can never know just how sincere those thanks have been at times...Hi! To those who haven't sent any notes yet...well, how about a New Year Good Resolution???

At Canberra F.C.T. things proceed along peacefully...those who are there cannot by any means escape to sea from "the ships that will never be sunk," and getting there is even more difficult. Incidentally, I hope you chaps are throwing off the "say Bud etc." and acquiring an Oxford Accent. Hi!

"ZACG ... Telegraphist A. Morris-Rees has nearly completed his fourth year in Canberra (poor....) and having a spell at some technical work for a change, but expects to be blowing the dust out of the bug again shortly. Whilst on leave recently he contacted ZCX, Fl/Lt Jack Evans, just down after contacting the Japs up North, had an fb ragchew re old times and using captured Jap gear after the war from Ham Radio. In his home town of Cessnock ZACG saw 2PZ, who, according to ZACG is keeping the Ham Spirit alive on the coalfields.

Another Canberra habituo is VK4NO Norm Thugo who doesn't say much and is making the most of a monotonous job, whilst just waiting for the day to come when the RI lifts the QRT..and just aren't we all. Slight YL QRM is prevalent with Norm at the moment.

2ANP Ldg. Tel. J. Gore is an ex-Canberra ham now at Darwin and spending his exile studying for his First Class. But at least one knows more or less the time of ones stay in Darwin.

To conclude from 2RY..he wants it mentioned that there are some Hams up at Canberra and they can be contacted at Harman..visitors are more than welcome. (Thanks Ray, om it was good to hear from you..ZYC)"

A letter from 30F bears the heading C.P.O. so it looks as if the Chief's Rating did come to the Reservo, after all. I gather that in the Silent Service...a Naval Reservist is of different catagories and the kind of "Amatourchappie" equivalent to the R.A.F.V.R prewar, is thought in some quarters, to be quite hopeless. As Frank has been in the RANVR (hope that's the right initials) for enough years to acquire a long service reserve ribbon...it seems to my "amateur opinion" that his Chief is just about right. To my way of thinking Reservists were of untold help at the beginning of this Scrap, without them the start would have been much worse. Anyway, good on you Frankie...how's the new Miss O'Dwyer faring???

Received a letter from Sgt. W. R. Cross Group 67M RAAF Darwin... Bill was one of the ones the War just pipped for a callsign...but after the War...!! He sends a cutting from Guinea Gold about the first "transmitting Station" set up in New Guinea for the Troops by a Queenslander and a New South Welshman.

P/O Tel Syd Clark, naturally, caught the mail with some dope. I will let him tell it to you himself...

"On Friday a small "ad" appeared in Guinea Gold to the effect that Allied Servicemen interested in Amateur Radio would be welcome at a meeting on Sunday 2 p.m. Charing Cross. Came p.p.m. and we had eight men present including R. H. Killiy 7RK and Bob Stevens 3OJ...Pro tem Syd was elected Sec... (see there will be plenty of letters written and how... 2YC) and 3OJ President...the rest of the elections being held over till things got on the way a bit...The club has been named the N.G. Radio Club and we are seeking affiliation with both the W.I.A. and the IRE, because many members have commercial interests. We heard of some more Hams handy but not present including... 5FC, 7SL, 7AL, and 3EC. The next meeting is scheduled for the following Sunday" and I'm sure Syd will have the dope down for the next issue .. 2YC.

And that is a good idea when one comes to think of it...it could be done in many areas...Townsville and Darwin come to mind at once... 3RJ mentions 17 Hams in the latter area and though scattered a central position may be able to be decided upon.

The Old Ray seems quite settled down in Darwin area those days and I suppose is now, following the prevailing idea...counting the time till the Southern leave eventuates. Hi! A nice inscribed wrist watch received from E/area Sigs was a bit of a shock, to 3RJ and so is all the more appreciated. Made all the work put in there the more worthwhile. Well now, how about that Radio Club, Ray, om?????

This makes up the double spaced paras. Hi!

Had a note from Ray Carter 2NC who reports himself as still attached to Brisbane Area...no news from him though, alas...talk about the "silent Service"...they aren't in it Hi!

Things have been sort of happening round the Marsland household, both senior and junior. The junior to wit Jim, 3NY is not entitled to a para in these pages, but nevertheless I'd better tell you of the arrival of a Jar. Op...Congrats Jim. The main news to come out of that home is that Jim's Pal, Cpl. Clem Day RAAF, VK3GY has been down on leave from Darwin where for the past 19 months he has had much time for reflection, the result of which is the announcement of his engagement to NY's sister...Congrats also Clem...All this happening at once is the Marsland family leaves them and also the Ham fraternity. wondering what's going to happen next. Clem 3GY was very well known in pre-war days from his activity on the 200 Mx band.

Another VK3 who has been recently on leave is L/Cpl Jim Watson VK3MQ. Jim is spending his time those days at Bonogilla. We hope to see him at VK3 meetings one of these days.

Looking forward to tons of notes in 1945 from "all those" Radio Clubs...hamfests etc....Happy New Year and Happy Landings... 2YC.

35th ANNUAL REPORT - WIRELESS INSTITUTE OF AUSTRALIA

- New South Wales Division -

To be presented at Annual Meeting to be held at Y.M.C.A., Thursday,
18th January, 1945 -

Gontlonom,

It is my privilege to place before you the 35th Annual Report of the Wireless Institute of Australia, New South Wales Division. The year under review has been a most active and progressive one and nothing has occurred to mar our belief that this Division of the Institute is the most active organisation of its kind, in the world today.

Obviously the most important activity has been Civil Defence Radio and it is pleasing to note that despite various Departmental curtailments the Emergency Communication Network is still looked upon as a very important part of that organisation. Fortunately the Network was never called upon to function in an emergency, but it is quite safe to say that if it had been called upon it would have met every demand made upon it. This statement made by the Minister concerned is a striking tribute to the operators concerned, and it is to them alone that all credit is due. The efficient manner in which messages are handled is striking testimony to the enthusiasm displayed during the course of exercises. With the war moving further Northward the need for the E.C.N. is rapidly diminishing, and it is quite possible that the Department of National Emergency Services will be disbanded in the very near future. It is the duty of every operator to ensure that his station will be operating right up to the time that instruction is given. If such is not the case the charge that the Radio was not functioning and was a reason for winding up N.E.S. could be quite reasonably made. If this came about it would be a blot on Amateur Radio and would undo all the good work that has been done.

Two other avenues of Civil Defence were opened up to Amateurs during the year viz. Bushfires Emergency Radio and the Sydney Harbour Patrol.

At the request of the Bushfires Advisory Committee the Institute undertook to make a Census of operating personnel and equipment that would be available to inaugurate a Bushfires Radio Network to work in conjunction with the Volunteer Bushfire Brigades. Unfortunately Amateurs and equipment did not always coincide with Fire Risk Areas. For instance the largest number of applications were received from the Newcastle and Coalfields district, but unfortunately for the amateurs concerned, this area came under a Fire Brigades District. Again quite a number of Country Amateurs were on Service or had left the country for the city. Despite these setbacks, it was eventually decided to commence operations at Young Dubbo and Wagga.

One of the greatest difficulties that had to be overcome was equipment, but despite this, Young under the capable leadership of J. Taylor VK2TC ably assisted by A. Thackray VK2TA and J. Dwyer VK2WA, and Dubbo guided by M. Moore VK2II will be operating very soon. Unfortunately Wagga Shire Council failed to support the scheme.

The Sydney Harbor Patrol is a yachtsman's organisation, carrying out important Security Patrols on the Harbor and its various inlets, bays etc. It is allied with Maritime Services, Board, National Emergency Services and the Police Department. Recently a very important Patrol was carried out in conjunction with an Allied Nation. Radio played a very important part in this sweep and the Commanding Officer paid a great tribute to the manner in which communications were handled.

The Radio organisation of the two bodies mentioned in previous paragraphs was brought into being as result of the efficient manner in which the E.C.N. functioned and the prophecy is now being borne out that the Emergency Communication Network would be only the forerunner of other similar Nets.

The E.C.N. was the Amateur's wartime organisation whose operations were confined to Sydney and Suburbs. The Bushfires, Radio Scheme will give the Country Amateur his opportunity both now and in peacetime whilst the Sydney Harbor Patrol will continue long after hostilities cease and presents the city amateur with peacetime emergency work.

Federal Headquarters has now been located in New South Wales three years and has endeavored to keep the various States informed on Amateur matters generally. The location of Federal Headquarters has been discussed several times recently, and at the November Meeting the New South Wales Division were informed that the Executive were of the opinion that Experimental Radio in Australia could be best served by having Federal Headquarters located in the State where the office of the Chief Radio Inspector was situated - Victoria. This expression of opinion was prompted by the fact that the day is very rapidly approaching when the question of postwar amateur radio must be discussed with the authorities and there is no better means of doing this than by personal contact. This view was endorsed by this Division and VK3 were asked to act as Headquarters Division. To date no reply has been received. (I have ascertained that this letter arrived at the same time as this report, and will be considered at the next council meeting on the 8th of January...Ed.)

The Official Organ "Amateur Radio" has been well supported during the year although the number of articles submitted by VK2 Amateurs was not as great as in previous years. In recent months the Magazine Committee have been fortunate in securing sufficient advertisements to ensure that the paper can be published at a profit. It is confidently expected that in the very near future that it will be possible to publish "Amateur Radio" in a printed form.

In an endeavor to ascertain the views of Australian Experimentors on the post war era, this Division of the Institute suggested to Federal Headquarters that an essay competition be conducted with this object in view. This suggestion was agreed to. New South Wales providing the prizes in the shape of War Savings Certificates. Prizes were won by J. Ballinger VK3NK, E. Hodgkins VK2EH and P/O Tal. S. Clark. Not many divergent views were expressed. The question of power was expected to raise quite a deal of discussion but with one exception, all entrants agreed - again with one exception - that if the Instituto was to progress, it would be necessary to have a permanent staff or at least a paid secretary.

During the year a slight re-shuffle in Office-Bearers took place due to the resignation of the Chairman Mr. R. A. Priddle. As a result Mr. W. G. Ryan VK2TI was elected Chairman and Mr. C. Higgins was appointed Secretary. Various councillors took of the work performed by Messrs. Priddle and Ryan whilst occupying the positions of Chairman and Secretary respectively, and a recommendation from Council that Mr. Priddle be elected to Life Membership was unanimously endorsed by the General Meeting.

Relations between the Wireless Branch and the Instituto have been of cordial nature and quite a deal of assistance has been rendered by the Senior R.I. Mr. Crawford and his assistants particularly Messrs. Wootherill and Brislan in the preparation of applications for the various Networks. The Instituto was also asked to co-operate with the Department by providing Observers for BBC and German Pacific Broadcasts.

In conjunction with the 1944 Annual Election of Officers a ballot was taken with reference to an increase in the annual subscription. During past years many calls had been made upon Instituto Funds and although the position was always financial very little could be set aside as a Reserve Fund. The increased subscription now makes it possible to do this, and a small beginning has been made to build up the Divisional assets by the purchase of £20 worth of War Savings Certificates. Before leaving the financial affairs of the Division it would be unjust if I were not to pay a tribute to the excellent manner in which Divisional Funds are fostered by the Treasurer Mr. G. Cole VK2DI. Mr. Cole was a newcomer to the position this year, but he soon settled down and his keenness and enthusiasm augurs well for the future.

General Meetings have been well attended and quite a number of both International and interstate visitors have been entertained. The presence of these visitors has made Meetings most attractive and recently attendances have been such that it was decided to seek larger rooms.

Membership has been well maintained and in order to cope with the anticipated influx in the very near future, Mr. E. Treharne was appointed Membership Secretary.

1944 saw the passing of one of the oldest identities in Radio in New South Wales in the person of Reg Fagan, VK2RJ. 2RJ was always an Instituto stalwart, and although due to location, he attended very few meetings in recent years, his interest never waned and no appeal went unanswered. It was decided to perpetuate his memory in the form of a Trophy when circumstances permit.

The Christmas Meeting of the Division took the form of a "Pound Night" supplemented by an exhibition of Moving Pictures organised by Mr. M. Lusby VK2WM, proceeds going to British Centre.

The foregoing, gentlemen, is a brief resumé of VK2 activities for 1944. Let us hope that 1945 will see the day very, very close when "73's om" will once more circle the globe.

W. G. Ryan VK2TI
Chairman.

VICTORIAN DIVISION

Two meetings have passed since these notes appeared last and those attending the two meetings were:- 3WQ, 3XC, 3QS, 3YR, 3DH, 3EO 3IK, 3PJ, 3BQ, 3WY, 3XD, 3VK, 3SE, 3CB, 3YL, 3WE, 3HX, 3JO, 3NY, Messrs. Ridgway, Hanson and Pottage.

A very welcome visitor was Lt. Norm Hannaford one of the foundation members of the Zero Boat Radio Club VK2ZB. Norm had been sendingspending some leave in Melbourne, and made a point of attending the December meeting.

Victorian Members are reminded that at the February Meeting to be held on Tuesday the 6th, Harry Kinnear 3KN will bring along a 16 mm movie outfit complete with sound and will put on a show comprising of many topical subjects and some educational subjects dealing with radio. Harry has offered to put on more of these shows later, and once again an appeal is made to those who may have access to films dealing with radio or associated subjects, to let us know if they could be made available for further shows.

The Laboratory Committee reports that a recent survey of the periodicals in the library has disclosed that many issues of "Amateur Radio;" "QST;" "Wireless World;" "Radio;" and "T & R Bulletin" are missing. The Committee considers that the files of these magazines should be made complete, and is anxious to get the copies listed. An appeal is made to members who possess any of these copies and have no further use for them to make them available to the Laboratory Committee for this purpose. We offer 3d per copy for "Amateur Radio" and 1/- per copy for "QST." Copies required are Amateur Radio" May, July, August, September, 1934; April 1935; Two copies each of June and July 1938.

"QST"...1938, May, June, July, September, November, December. 1939...Complete set except April, 1940, 1941, 1942, 1943 and 1944 all copies. Next month we will list the copies wanted of "Wireless World" "Radio" and "T & R. Bulletin." Naturally if anyone has copies they do not require and are prepared to present them to the Institute they will be received with sincere thanks.

All Members of the Division will join in wishing congratulations to our Treasurer Jim Marsland 3NY and his good wife on the arrival of a Jnr. Op. On good authority Jim has already delved into the junk box and rescued his key which has been polished up and adjusted. Furthermore it is understood that he intends to borrow one of the morse oscillators from the Institute on his next visit.

CORRECTION...In the formula on page 3 :- 100 should read 910

THE WIRELESS INSTITUTE OF AUSTRALIA



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